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Other Contributor(s)	University of Hong Kong
Author(s)	Ip, Wan-chak; 葉昀澤
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THE UNIVERSITY OF HONG KONG

TIE-IN SALES OF FITTING OUT AND STRUCTURE: A PROBIT ANALYSIS OF RESIDENTIAL DEVELOPMENT IN CHINA

A DISSERTATION

SUBMITTED TO

FACULTY OF ARCHITECTURE

IN CANDIDACY FOR

THE DEGREE OF

BACHELOR OF SCIENCE IN SURVEYING

DEPARTMENT OF REAL ESTATE AND CONSTRUCTION

BY

IP WAN CHAK

APRIL 10, 2008

DECLARATION

I declare that this dissertation represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

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WARNING

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Abstract

As a contribution to the study of wider issues of contractual arrangements, this dissertation empirically examines the tie-in sale arrangement of structure and fitting out of private residential buildings in Beijing.

Existing theories derived from the literature are limited and incapable of explaining the tie-in sale arrangement in a competitive market. This dissertation seeks to bridge the gap. It adopts a probit model to examine the data for 137 residential developments in Beijing which were available for sale from June 2001 to Dec 2007. it is found that tie-in sale of structure and fitting out happens more often when the developers want high sales revenue or when the developments are farther away from city centre, while it is less probable so if the development involves villa type buildings. It is hoped that this research could stimulate further studies on this rather unexploited but important topic of contractual arrangement.

Table i

Summary of Hypothesis and Test Results

Hypothesis	Test Results
Hypothesis 1: transaction unit price is positively related to the probability that tie-in sale is adopted	Not Refuted
Hypothesis 2: apartments have a higher probability of coming with fitting outs than villas	Not Refuted
Hypothesis 3: the distance from the city centre is positively related to the probability of adoption of tie-in sales	Not Refuted
Hypothesis 4: the average size of residential units is negatively related to the probability of adoption of tying arrangement	Refuted

Chapter 1. Introduction

Tie-in sales means the arrangement where a particular good (tying good) can only be sold if the buyer purchases also another good (tied good). The literature on tie-in sales is rooted in American antitrust analysis, which focuses on monopolists' tie-in behaviours despite the fact that tie-in behaviours are also very commonly seen in competitive markets. As a result, the existing theories on tie-in sales are unable to explain this widespread phenomenon.

Tie-in sales can be found in many competitive markets. For instance, in the food and beverage services market, nearly all restaurants would tie the food with drinks, selling as 'lunch set' or 'dinner set'. The market is fully competitive with thousands of different service providers in spite of the existence of big food chains. Another example is the tying arrangements of mobile phones with mobile network services. Although in most places, number of service providers is limited, the market is still being considered as a competitive one. It is because the common

technology adopted by most of the service providers enables customers to move freely from one service provider to another. Indeed, mobile users in some markets like Hong Kong can choose to purchase the things separately.

The China private residential market is also a competitive market where tie-in sales can be observed. Some developers may adopt such tying arrangement of fitting out to structure in some of their developments. Although literature about tie-in sales is not scarce, the reason behind such arrangement in the competitive market has not been explored. To start with, the private residential market of mainland China will be briefly introduced.

1.1 The China residential market

In China, residential units are sold with or without fitting-outs. This is not commonly found in other parts of the world where people take it for granted a new flat must come with fitting-outs. In China, a residential unit without fitting-out is known as a 'maopifang'. The practice became popular after 1994 when the construction authority relaxed the requirements for acceptance so that residential buildings without fitting-outs became eligible for acceptance. Residential building developers in other places may not be able to provide such maopifang as they may be limited by legal requirements for occupation, mostly for the sake of safety. For instance, a building without sanitary fittings could not get an occupation permit in Hong Kong[1].

When a residential unit comes with fitting-out, the buyers are forced to purchase the fitting-outs together with the structure of flats. This is an example of tie-in sales. Fitting-out to flats, being the tied product here, in fact could be purchased separately in the

[1] Buildings Ordinance, Hong Kong Legislation (cap 123)

market. Developers in most cases arrange the whole development to be tied or not tied. It is not usual to see developers adopting a mixed bundling strategy on developments, i.e. to provide both tied and untied flats in a specific development. Thus, it seems there are some factors behind for the developers to consider when deciding to tie or not. The characteristics of the development could be the critical factors for consideration. Since these characteristics help the developers sort out different target groups of customers, so that the developer may be able to increase profit through the adoption of tie-in strategies. Of course, the tying arrangement and its determinants behind other types of tie-in arrangements remains an interesting topic which worth further studies.

The private residential market in Beijing is competitive. There is no dominant developer in the city and it is found from the data source that among the 137 samples, there are 132 different developers. It is found that existing theories on the topic ‘tie-in sales’ or ‘commodity bundling’ are inadequate to explain the

situation in competitive markets. This motivates the dissertation.

1.2 Objectives of the study

This study tries to analyze empirically the phenomenon of tie-in sales in the private residential market in Beijing, in the attempt to find out how various characteristics of developments affect the decision of tie-in sales arrangement.

The study of tie-in sales arrangement in the private residential market is important in two aspects. We believe there must be some motivations driving the developers to adopt such arrangement. Their motivations could be increasing sales efficiency or promoting profitability of project. If we can find such motivations behind, it is possible that such arrangement may be able to be incorporated into other markets. Moreover, the study, as a pioneer in the topic, can contribute to the field of pricing strategy and promote further studies.

1.3 Organization of the study

This dissertation begins with the introduction, which is followed by a literature review. The literature review aims at finding how the term 'tie-in sales' has been defined, as well as some rationales behind such practice as investigated by the previous scholars. Then it proposes theories to explain why tie-in arrangement is adopted in a competitive market. After the development of theories, hypotheses are developed and data samples are presented. The dissertation adopts a probit model to verify four proposed measures of separating groups of consumers with different preferences. It ends by discussing on the results how the characteristics influence tie-in sales arrangement and why is that so. Conclusion will then be drawn. Finally, limitations of this study will be stated and some areas for further studies will be suggested.

Chapter 2. Literature review

The area of study is tie-in sales. The topic becomes hot since the Bowman's (1957) introductory paper on the tying arrangement. Actually the basis for the topic is the American's antitrust law, which states that tie-in sales may help monopoly seller of the tied product to extend its monopoly power to the tying product's market. The literature review of this dissertation begins by examining previous definitions of tie-in sale. This can help clarify the scope of the topic. After that, some rationales behind tying arrangement discovered by previous scholars would be reviewed. The rationales stimulate us to think of the reason and the basis behind such arrangement, especially in the private residential market we are investigating in this study. After that, limitations in the previous studies of tie-in sales will be discussed.

2.1 Complementarity and requirement to purchase

Bowman (1957) and Burstein (1960) are two of the earliest literatures concerning the phenomenon of tie-in sales in economics. Bowman (1957) defined a tie-in sale as conditioning the sale or lease of one commodity on the sale or lease of another. Bowman's literature gave an early definition, which was adopted by many researchers. This is the pioneer of the research relating to tie-in sales. According to Burstein (1960), a tie-in sale is ordinarily defined as one in which the seller of the tying good requires that one or more other goods used with the tying good also be purchased from him. Burstein's definition implied that tying and tied goods are complementary in nature. Moreover, he intended to use the term more broadly and gave a new definition. Once the purchaser of the tying good is required to purchase one or more tied goods from the seller of the tying good, it can be treated as a tie-in sale.

These two definitions, one provided by Bowman and the other by Burstein, are different in two ways. First, the former implies a

relationship between the tying and the tied goods. The latter does not have such requirement on the goods being sold. Actually Burstein (1960) concluded in his paper that complementarity of the goods is not essential to the rationale of tie-in sale. Burstein have redefined the term tie-in sale in the paper and implied in his definition that the goods need not to be complementary in nature. Another difference between the two definitions is that the latter concerns with "requirement" to purchase the tying goods whenever they need from the seller.

First, we shall discuss the matter of complementarity. Perhaps, complementarity may not be an essential relationship for two goods to be tied for sale, we could see this important point when the seller wants to increase sales efficiency through the tie-in sales arrangement[2]. Take the example of lunch set offered by most restaurants again. Food and beverage are complementary in nature. Of course, customers can choose to buy either food or beverage when they enter a restaurant. If the restaurant offers the

[2] Gans and Kings (2004)

two goods separately, the customers may choose to buy the beverages or food anywhere else. However, as food and beverage are complementary, customers usually demand them together at the same time. If the restaurant is also offering lunch sets, with the set price lower than the sum of separate goods, most people would choose set lunch instead. In such way, restaurant's sales efficiency can be increased.

Telser (1979) held a different view with Burstein on the relationship of tying and tied goods. He insisted that the two goods have to be complementary. Telser stated that in a tie-in sale, the seller of one commodity requires his customers to make all the purchases of at least one of the complementary commodities in the tie-in. The goods are complementary in nature. Although the complementarity of the goods is not essential to tie-in sale, it could be one of the rationales for the decision of tie-in sales – it can increase the sale efficiency.

Second, what is the difference between "requirement to

purchase" and "a simple purchase"? We can immediately see the difference when we consider the cases that IBM ties its computers with punch cards and Microsoft ties Internet Explorer and other softwares with Windows. In fact, IBM did not actually sell its computers. Instead they were rented to users. Computer users rented the machines and IBM required the lessees to purchase punch cards from her (to be used with computers together). IBM tied the sale of computers with requirement to purchase punch cards[3]. This means that computer users have to use punch cards from IBM instead of from any other suppliers. It is totally different in Microsoft's case. Microsoft sold computer's Operating Systems. She tied the OS with some softwares such as Internet Explorer. The tied product in the Microsoft case is a simple purchase instead of a requirement to the purchase of something. Consider the whole situation again. What if IBM sold her computers and Microsoft lease out computer's OS? Of course it would be more difficult for IBM to control her customer. In such example it is obvious that the tied product can be

[3] IBM Corporation v. United States, 298 U.S. 131 (1936).

"requirement to purchase" in case the tie-in sale is a lease in nature.

Requirement to purchase vs. a single purchase in private residential market

We can find a similar nature in the private residential market. Consider private residential units as the tying good and the fitting outs (interior decoration) as the tied good. For a new residential flat, some developers require only a one-off purchase of the tied good (structure). In case the purchaser is not satisfied with the tied decorations, it is always possible that the decorations could be removed and provided again by some other interior design and decoration companies rather than the developer. However, it still happens in the property market where the seller ties a unit with requirement to purchase interior decoration from him. However, this happens only when the flat is leased.

Pure bundling and mixed bundling

This dissertation will not analyze requirement to purchase in

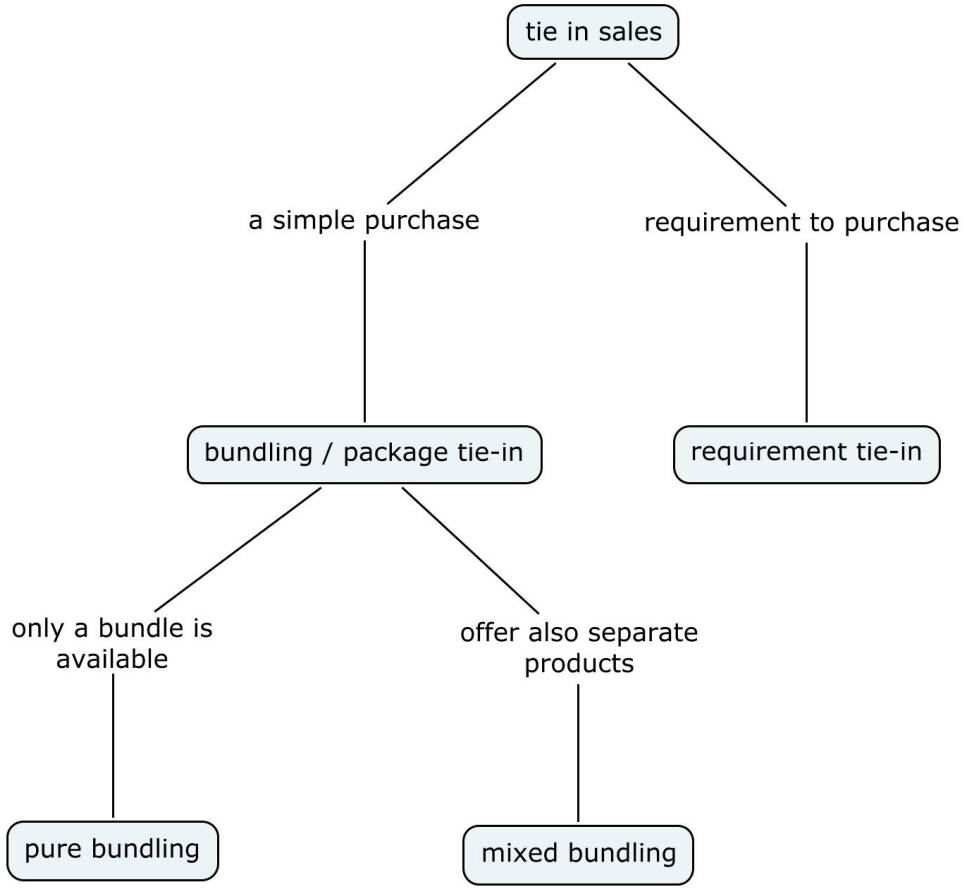
more detail, it will instead concentrate on the single purchase case. A classification of the concept of tie-in sale will however help understand the topic. Carlton and Perloff (1994) stated that a tie-in sale is one in which a consumer can buy one good only by purchasing another good as well. They divided tie-in sales into two common types. One is bundling or a package tie-in sale which occurs when two or more products are sold only in fixed proportions. The other type is a requirements tie-in sale, where customers who purchase one product from a firm are required to make all their purchases of another product from that firm.

Whinston (1989) further classify the first type of tie-in, which is known as bundling or package tie-in sale, into pure bundling and mixed bundling. The term pure bundling is used to describe the cases in which the seller offers the goods for sale only as a bundle with a single bundle price. While mixed bundling is related to the case when the seller offers to sell the products both separately and in a bundle, with the price of bundle different from the sum of the single good prices. Figure 2.1 shows the

classification diagram.

Figure 2.1

Classification of tie-in sales according to Carlton and Perloff (1994) and Whinston (1989)



However, even if the firm charges separate prices for the two products, he can still prevent the consumer from buying just one of the products. Recently there is a famous case concerning the selling of i-phone in Germany. This case can be used to explain why sellers can prevent consumer from buying just one of the products. Apple Inc.'s 'i-phone' is a hot product with an

innovative design. Supporters believe that it brings a feeling of fashion when they take the i-phones outdoor. However, in Germany, Apple Inc. cooperated with T-mobile to sell the phones. T-mobile becomes the only legal agent to provide i-phone to the Germans. T-mobile tied the phone with its telecommunication service plans. At the same time, the phones are technically locked in a way that it must be used with T-mobile SIM cards. In this situation the consumer is forced to buy the bundle and to use T-mobile's service for at least two years. Another telecommunication service provider, Vodafone, put the case to court. It claims that the acts of T-mobile have offence the antitrust law. The court held that T-mobile has violated the antitrust laws and issued an order to T-mobile that they must put unlocked i-phones into market. After such an order, T-mobile unlocked i-phones for sale, but they priced it at Eu999, while originally a locked phone with service plan tied is sold at a price of Eu399.

In this case, T-mobile adopted a mixed bundling strategy to

prevent from infringing the antitrust law. Also, the difference between the options is quite large that consumers would like to choose the tied one. If someone is keen on using other telecommunication service provider, he would be paying a sum so high that T-mobile is able to earn a much greater profit.

The literature of tie-in sale thereafter gave similar definitions of tie-in sales. According to the classifications shown above, the tie-in sale of private residential units with / without fitting outs is a pure bundling case. It is because in most cases of tie-in sale, the developer would only offer the goods as a bundle, instead of providing a separate price for the tied and tying products in parallel. Moreover, the tied and tying product is always being sold in proportion. In our case, it is one to one. The importance of classifying tie-in sales lies in that it helps to analyze rationales behind such arrangement. These rationales are analyzed in the following section.

2.2 Reasons for tie-in

Literature on this interesting topic of tie-in sales is mostly rooted on the American antitrust laws. The American courts concluded in most cases that tie-in sales is illegal because of the extension of monopolist power. This is commonly known as 'the leverage theory' which stated that tying arrangement may be adopted by a monopolist seller (monopoly on tying product) to extend its monopoly power to a second market (the tied product). However, the courts' conclusion was criticized by the Chicago school of antitrust analysis. These include 'economic efficiency', 'reputation protection and quality assurance', 'metering device', and 'extract consumer surplus through price discrimination'. We shall nevertheless discuss the leverage theory first.

Extend monopolist power (The leverage theory)

The investigation through the topic of tie-in sales began since the United States antitrust law. It is originally believed that tie-in sales can help the monopoly sellers to extend their monopoly power into another market, thus prohibited by the antitrust law.

However, such rationale of tie-in sales is based on the assumption that the seller of tying product has monopoly power in the market.

The following paragraph best summarized the U.S. courts' attitude towards tie-in sale:

> '…A primary basis for this condemnation has been the courts' belief in what has come to be known as the "leverage theory" of tying: that is, that tying provides a mechanism whereby a firm with monopoly power in one market can use the leverage provided by this power to foreclose sales in, and thereby monopolize, a second market[4].'

Conditioning the sale or lease of one commodity on the sale or lease of another is generally considered a trade restraining device. The recent report of the U.S. Attorney General's Committee to

[4] Whinston, Michael D. Tying, foreclosure, and exclusion. The American Economic Review 80 (4) (1990): 837-859.

Study the Antitrust Laws declares that the purpose of a tying contract is monopolistic exploitation[5].

Apart from the leverage theory, economists suggested many alternative theories to explain the practice of tie-in sales.

Economic efficiency

Tie-in sale may be used to increase market efficiency given that the two goods are complementary in nature.

Gans and Kings' (2004) analysis showed that bundling is more desirable than buying the individual products if the gains from the bundle are greater than the sum of the gains from trade on each individual product. This reflects both demand side and supply side benefits from bundling. Gans and Kings sum up their analysis on social efficiency of bundling as follows: bundling is most likely to be socially efficient if it involves some complementarity on the demand (customer valuation) or supply

[5] U.S. Department of Justice, Vertical Restraints Guidelines, antitrust and trade regulation report, Washington: Bureau of National Affairs, 1985

(cost saving) side.

Gans and Kings implied that tie-in sale can increase economic efficiency only when the tied and tying products are complementary in nature. The reason behind is that a mass production can save cost. For the producer to produce both the tying and the tied products, and sell them together as a bundle, the average cost per product under a mass production must be lower.

Carlton and Perloff (1994) also supported the possibility of increasing market efficiency under a tying arrangement. They argued that tie-in sales economize on the cost of grading individual units of a product. Instead of grading each unit separately, total search cost can be reduced if the buyer must purchase the items together. To sum up, tie-in sales can increase economic efficiency if the products are complementary in nature. Both the seller and the purchaser may gain benefit from such arrangement.

Reputation protection and quality assurance

Apart from increasing market efficiency, complementarity of products can also ensure the quality of the bundle and hence protect reputation of the seller. Haas-Wilson (1987) suggested that sellers may engage in tying to protect their reputation in case the consumers can only evaluate the performance of the bundled products rather than the individual performance of the tying and tied goods respectively.

Craswell (1982) suggested that the seller can gain informational benefits through adopting the tying arrangement. If consumers can evaluate the quality of the combined good or service but not the quality of individual components, then purchasing the components from different sources will make it difficult for them to assign responsibility for any subsequent product failure.

Metering device

Sometimes tie-in sales arrangement can be used as a metering

device which counts the usage of tied product of individual customers effectively.

Telser (1979) suggested that a necessary condition for the use of tie-in sales as a metering device is that customers combine the component commodities in different proportions. Were the seller to offer all customers the same bundling package of component commodities, no metering is possible here. Telser hence suggested that for a tie-in sale to achieve the purpose of metering, the tie-in case must be a requirement to purchase instead of bundling.

Schmalensee (1982) suggested that for the analysis of tying contracts as metering device, the two products involved are usually complements and that buyers with higher reservation prices for the tying product demand more units of the tied product. This made it very clear that only the un-proportioned tie-in sales, i.e. tied product as a requirement to purchase, can achieve this purpose as a metering device for individual

customers. The idea of Schmalensee is consistent with Telser.

Extract consumer surplus through price discrimination

Adams and Yellen (1976) suggested that the profitability of commodity bundling can stem from its ability to sort customers into groups with different reservation price characteristics, and hence to extract consumer surplus.

There has been a lot of research works about tie-in sales as an effective price discrimination device. These includes Bowman (1957), Adams and Yellen (1976), Posner (1976), Schmalensee (1982), and Carlton and Perloff (1994). All of the scholars have a positive attitude towards the relationship of price discrimination and tie-in sales.

Monopoly not being a sufficient condition for the presence of tie-in sale

Most of the above reviewed reasons for tie-in requires the presense of monopoly power. For instance, Telser (1979)

suggested that for the tie-in policy to be successful the seller must have monopoly in at least one of the commodities in the tie-in. This is consistent with Bowman's (1957) point of view that tie-in sale requires the existence of monopoly power. In other words the seller must have the ability to control the supply of the tied commodity. Bowman believed that if the seller does not have such market power, he would be displaced by a competitive seller who does not impose the tying policy.

However, Deborah (1987) investigated the contact lens market and suggested that sellers may not need to be monopolies for the tie-in sales to be present. Indeed, we observed a lot of tie-in arrangements in competitive markets. This clearly shows that existing theories are insufficient to explain the phenomenon in the competitive market.

2.3 Contribution of this dissertation

This dissertation seeks to contribute to the study of tie-in sale arrangement in a competitive market. This competitive market is the private residential real estate market. There have been few studies on competitive markets. One notable exception is Deborah (1987), who studied tie-in arrangement in contact lens market where there are many sellers. Deborah's study may not be applicable to our case, as private residential market is definitely of different nature with any other market else. This dissertation thus attempts to fill the gap to investigate tie-in sales in competitive residential real estate market.

In addition, the theories advanced in this dissertation will be empirically examined. In contrast, theoretical studies by previous scholars rely too much on assumptions. Of course, assumptions can help make problem simpler, and make explanations easier to be understood. However, too many assumptions will make verification of theories almost impossible. That is probably why there are few empirical studies in the literature.

This study seeks to make such a contribution. It is hoped that further investigations into the interesting but unexploited topic will be invoked.

Chapter 3. Method and hypothesis

In real estate market of Beijing and even the whole mainland China's, the adoption of tying arrangement, i.e. to tie the structure with fitting out, is common. However, such arrangement is rare or absent in Hong Kong or any other countries.

It is believed there must be some motivations behind the arrangement. Probable reasons could be that tie-in sale in some circumstances enables the development to increase or even maximize profit. Profit maximization may be achieved by attracting a particular group of customer, or a total cost reduction, or to speed up the sales process.

Hypotheses developed in the following sections are based on the assumption that different consumers have different consumer preferences for economies of scale. We see this as the primary basis for the tie-in sales in the private residential market. For instance, some consumers value economies of scale in the mass

production of fitting out considerably more. This can make a big difference when considering which development is better and worth buying.

Some factors we believe are the main concern when consumers choose a flat to buy. For instance, given two families of the same size, the one with higher income level may choose a larger flat. Hence, size of a flat could be a factor capable of separating the group of consumers with higher income from the group with lower income. It is very possible that the developers will consider the consumers' preference patterns while they consider the adoption of tie-in sales in their development. Hence, we propose the following factors, which could help developers sort out consumer groups with different consumer preference on the tie-in sales arrangement.

3.1 Hypothesis

Price, type, location, size of a flat are the four factors that could separate consumers of different groups who have different preference for tie-in arrangement.

Compare two developments; one solely sells the structure and the other ties the structure with fitting out, it is obvious that the latter should be sold in a higher price, with all other being equal. It is because the selling price of a bundled flat involves not only the structure of flat and the land price, but also the tied fitting out. The flat would be ready for occupation immediately. A bundled product should be of higher value to most consumers.

A flat with fitting outs tied for sale must be of higher value than those without in the eyes of most consumers. The cost of a mass production of fitting outs on the entire development is reduced compare with the cases fitting outs being purchased separately. The property developer could earn a higher profit if the tie-in arrangement is adopted. It is thus hypothesized that there would

be a positive relation between the transaction unit price and the probability that tie-in sale is adopted on the development.

Hypothesis 1: transaction unit price is positively related to the probability that tie-in sale is adopted.

In contrast to apartment type buildings, villa type developments feature a smaller number of residential units. Target consumers of the two types of flats are different. Those who have higher income prefer the latter type of flat because a smaller scale of development can provide them with the feeling of being unique and superior, as well as the sense of privacy and safety. More often, villas would be targeted at middle or high income groups. On the contrary, apartments would be more likely targeted at the lower income groups. Consumers of villa type developments usually have requirements of unique decoration. While for those lower income groups, cost reduction in a mass production would be of higher priority than a unique fitting out design. Hence, they do not mind having the same fitting out in their flat as long as it

is cheaper. If the consumers of villa type developments require a unique fitting out design in their flats, they would have to demolish the tied fitting outs. It would be a waste of resources and also the cost of tied fitting out in their point of view would be zero or even negative. The amounts saved in the economies of scale of the mass production of fitting outs worth nothing to them. Thus, to suit the preference of these customers, it is hypothesized that developers are less likely to adopt tie-in sales in apartments than in villas.

Hypothesis 2: apartments have a higher probability of coming with fitting outs than villas.

Price of land depends greatly on its location. Lands located at the heart of the city must be valued higher than the one situated at suburbs given that all other characteristics of the two pieces of land are the same. It is because the former one is of higher accessibility, which benefits a variety of land uses. For instance, a highly accessible office can keep the occupants in close contact

with its business partners. It also explains why business agglomerate at CBDs in most countries. In addition, retail businesses consider accessibility as an absolute advantage because it helps raise sales and revenue directly.

Residential buildings benefit from high accessibility too. Residence can save time traveling to the work place and their life will be more convenience. Thus, the nearer a land to the city centre, the higher its price would be. Locations help to separate the consumer groups with different income levels, which will have different preference on tie-in arrangement. It implies that developments located farther away from city centre will target at lower income consumers while those located closer will target at higher income groups. Thus, it is hypothesized that distance of development from city centre will have a positive effect on the adoption of tie-in sales. It is because lower income groups will value the economies of scale in mass production of fitting outs higher.

Hypothesis 3: the distance from the city centre is positively related to the probability of adoption of tie-in sales

Similar to the type of flats (villa and apartment), consumers with heterogeneous preference on the fitting out design could be separated by the size of the flats. For larger flats, the targeted groups of consumers are mainly the higher income groups. Given the same family size, the family with higher income level demands a relatively larger flat than a lower income one does. Moreover, larger flat size implies that the structure and design of flat could be more complicated. Users may demand a unique and complex fitting out design in such larger and complicate flats. Hence, it is hypothesized that larger flats are less likely to be tied.

Hypothesis 4: the average size of residential units is negatively related to the probability of adoption of tying arrangement.

3.2 Data

Our hypothesis will be verified with empirical data. The following section shows the source of the data

Source of data

In Hong Kong, market transaction of private residential units can be found in the Land Registry. However, there is no official transaction registration system in mainland China. Hence, no formal transaction records are publicly available. However, specifications of sale of developments data are available from the web[6]. It provides information on developments in sale or about to be available in market. Specifications such as the location of site, the type of flats, plot ratio, total size of development, date of sale, name of developer, and most importantly, average transaction prices are recorded. Apart from the development particulars, the sale strategy of the developer – whether or not the structure is tied with fitting out for sale, is also recorded. Although it is not an authorized source of data, it is the most reliable source

[6] The Beijing Soufun web, http://www.soufun.com/house/subject/200701/2007yuce/index.html

available about the transaction records of the Beijing residential development sales.

Number of samples and characteristics of development concerned

137 samples of recent developments in Beijing are obtained. They are located in various districts including Chaoyang, Haiding, Changping, Xuanwu, Chongmen, Dongcheng, and Xicheng. The sales of developments were made from June 2001 to November 2007.

A variety of development characteristics are collected. It includes:

(a). Name of development

(b). District

(c). Ring (as an indication of the distance to city centre)

(d). Type of units (apartment or villa)

(e). Number of storeys of the building

(f). Average market price

(g). Average unit transaction price

(h). Number of transacted units

(i). Total transacted area

(j). Date of sales

(k). Tie-in sales arrangement

(l). Name of developer

Among the twelve characteristics collected, only six are used for hypothesis testing. They include (c), (d), (g), (h), (i), and (k). (k) is the core for this study, as it is the dependent variable in the models. (c) is an indicator of distance of a development to the city centre and it is used for testing hypothesis 3. (d) describes the type of flats in the development. It will be converted into a dummy variable (1 for villa and 0 for apartments) for testing hypothesis 2. (g) will be used for testing hypothesis 1. (h) and (i) will be used together to compute the average size of flats of the development. This average size will then be used to test hypothesis 4.

In some cases, individual developers may have their own preference on the habit of adopting tying arrangement of fitting out. Some may think the developers' effect can be highly significant factor affecting the decision to tie-in. However, this effect is not observable in our data set. It is because Beijing residential market is not dominated by any developer. Our data show that the 137 developments were developed by 133 different developers. This confirms that the private residential market in Beijing is a competitive market.

Table 3.1 describes some statistical characteristics of our data sample. Beijing is planned to be a city with concentric rings of avenues. The second ring surrounds the old city walls within which the city centre is located. The outer rings are known as the third ring, the fourth and the fifth respectively. As the city expands, there will be more rings. Rings are thus an ordinal measure of the distance to the centre of city.

Table 3.1

Description of sample data

ITEM	CATEGORIES	NUMBER OF OBSERVATIONS	% TO TOTAL NUMBER OF SAMPLES
Total number of samples		137	100%
Fitting out status	Tied with structure	71	52%
	Not tied	64	47%
	Mixed / unknown	2	1%
Ring location	1	15	11%
	2	19	14%
	3	20	15%
	4	51	37%
	5	32	23%
Type of flats of development	Apartment only	124	91%
	Villa included	13	9%
Transaction unit price (RMB/m^2)	<10000	37	27%
	10000-14999	42	31%
	15000-19999	13	9%
	>20000	9	7%
	unknown	36	26%
Average flat size	<100	29	21%

(m^2)	100-149	41	30%
	150-199	16	12%
	>200	15	11%
	unknown	36	26%

3.3 Testing method

The purpose of this dissertation is to find out the relationship between (a) whether tying arrangement is adopted in a development and (b) the characteristics of developments which could separate consumers with different preference on tying arrangement. A probit model will be adopted to test the hypotheses.

Statistical models

Our dependent variable is a dummy variable that can take a value of either 1 or 0. There are three standard statistical categorical models that would potentially deal with this kind of dependent variable. They are linear probability (LP) model, the probit model and the logit model. These models are collectively known as the qualitative response, quantal, categorical or discrete models (Amemiya, 1981). Probit and logit models are sometimes referred to as binary models as the dependent variable is restricted to be 0 or 1.

Probit analysis was used as early as in the 1930s. Initially the model is used for some studies on the impact of insecticide on insects. Thereafter, due to its effectiveness and reliability, the model has been applied in various research disciplines. Examples are like Lee and Trost (1978), who introduced the probit model on housing economics.

It is very tempting to specify a linear probability model due to its simplicity (Aldrich, 1984).

$$Y_i = b_0 + b_1 X_{i1} + b_2 X_{i2} + \ldots + b_k X_{ik} + \mathrm{e}_i = \sum_{j=0}^{k} b_j X_{ij} + \mathrm{e}_i$$

Where Y is the dependent variable, X_k are the independent variables, b_k are the parameters, e is the random error. In our situation, the dependent variable Y denotes whether a development comes with fitting outs. This value shall be constrained to be from 0 to 1. Amemiya (1981) argued that there exists a defect in the linear probability model, making it unsuitable for testing about probability. The problem is that while one side is restricted to be either 1 or 0, the other side of the equation is not. Thus, linear regression model is not suitable

for our tests here.

We hence adopt the probit model to test our data since the results of the probit model is very similar to those of logit model (Amemiya, 1981). The probit model provides a useful means for modeling the dependence of a binary response variable on one or more explanatory variables, where the latter can be either categorical or continuous. Suppose there is an unobserved variable y* which ranges from negative infinity to positive infinity. This y* is assumed to be linearly related to the observed independent variable X such that

$$y^* = \sum b_j X_j + e$$

y* is then linked to the observed binary variable y (the outcome) by the equation:

$$Y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* \le 0 \end{cases}$$

Hence, $\Pr(y=1) = \Pr(y^*>0)$, and $\Pr(y=0) = \Pr(y^* \le 0) = 1 - \Pr(y=1)$, where Pr means probability. Since y* is continuous, the problems of specifying a linear probability model are avoided. We assume

the expected value of the error term is 0, i.e. $E(e|X)=0$. Since y* is not observable, the variance of the error term e, i.e. $Var(e|X)$, can not be estimated. We have to assume the distribution of the error term. As the probability of an event is unaffected by the identifying assumption regarding $Var(e|X)$ (Long 1997), we here assume the error term e follows a normal distribution with mean =0 and variance =1. the cumulative distribution function of a normal distribution with $E(e|X)=0$ and $Var(e|X)=1$ is

$$\Phi(e)=\int_{-\infty}^{e}\frac{1}{\sqrt{2\pi}}\exp\left(-\frac{t^2}{2}\right)dt$$

$Pr(y=1)=Pr(y^*>0)=Pr(\sum b_jX_j+e>0)=Pr(e>-\sum b_jX_j)$. Since the cumulative normal distribution is symmetrical, $Pr(e>-\sum b_jX_j)=Pr(e<\sum b_jX_j)$. Hence,

$$\begin{aligned}&Pr(y=1)\\&=Pr(e<\sum b_jX_j)\\&=\Phi(\sum b_jX_j)\\&=\int_{-\infty}^{\Sigma b_jX_j}\frac{1}{\sqrt{2\pi}}\exp\left(-\frac{t^2}{2}\right)dt\end{aligned}$$

Maximum likelihood method will be used to estimate the parameters. If the parameters are significant at 10% level or less and have the expected signs, the hypotheses will be confirmed.

Otherwise, they will be refuted.

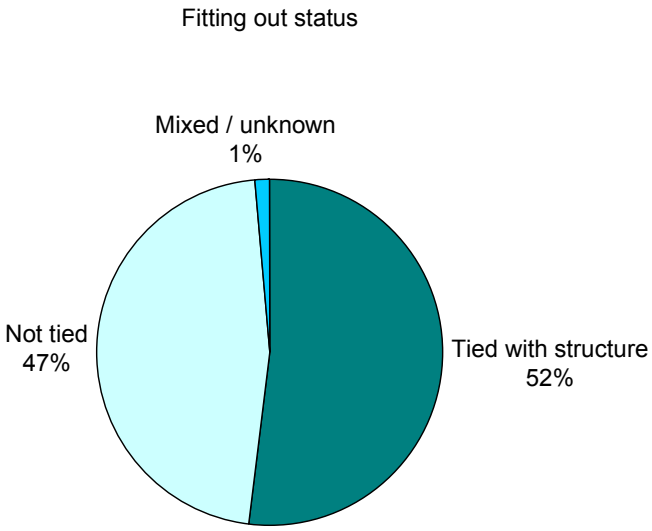
The dependent variable

In our probit analysis, the dependent variable is the probability of tying fitting out to the structure of units in a development.

The data set shows that one of the samples has adopted a mixed bundling strategy, i.e. some of the flats are sold with solely structure while some of the flats are tied with fitting outs for sale in the same development. The tying status of another development is unknown. Therefore, these two samples will be discarded in our study.

If tie-in sales is observed in a development, the value of dependent variable will be set to 1. On the other hand, if tie-in sales is not observed in a sample, the value of dependent variable will be set to 0. Figure 3.1 shows the distribution of this variable.

Figure 3.1
Fitting out status of developments



The independent variables

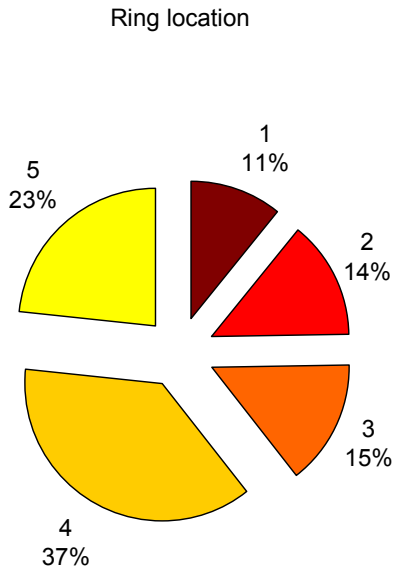
From the hypotheses, a number of factors are believed to have effect on developers' decision.

Distance of development to the city centre

We have shown in the previous text that ring could be an ordinal measure of the distance to the city centre. If the development is located within the second ring, the value of this independent variable will be set to 1. If it is between the second ring and the third ring, the value of this independent variable will be set to 2, and so on. Those located outside the fifth ring will have a value of 5. Figure 3.2 shows the distribution of this variable.

Figure 3.2

Ring number as a measure of distance to city centre

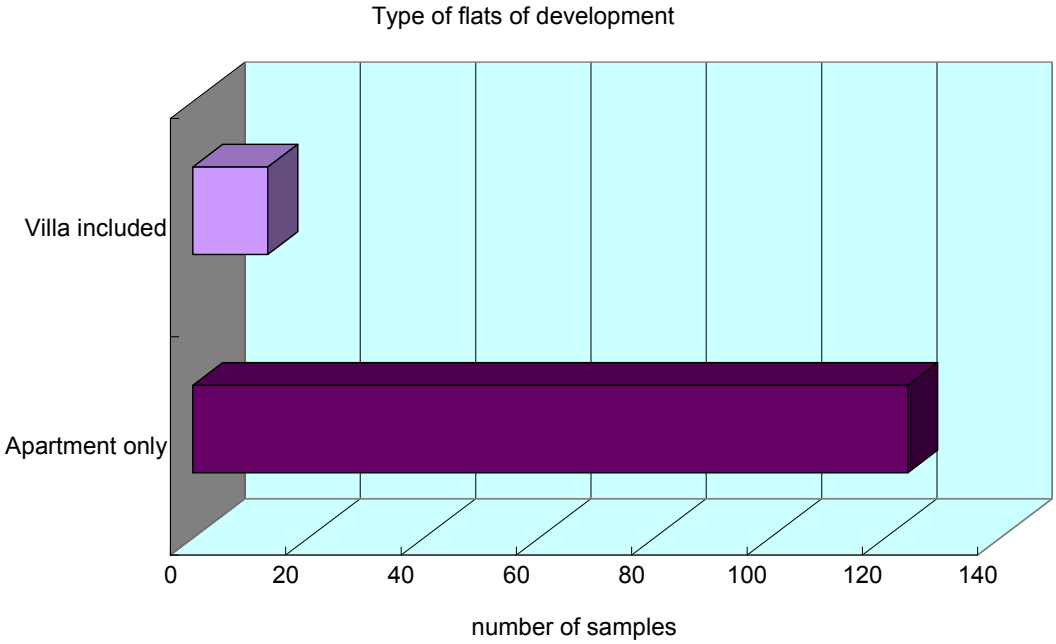


Type of development (categorical)

Flats are classified into two types, namely villa and apartment. For the developments which have only apartment units, the value of the variable will be set as 0. For those developments which include villa, the value of the variable will be set as 1. Those developments with both villa and apartment will also have the value of 1. Figure 3.3 shows the distribution of this variable.

Figure 3.3

Type of developments



Unit transaction price (continuous)

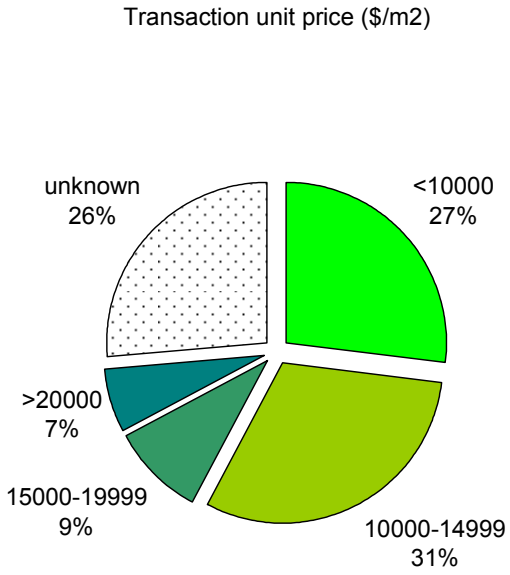
Average unit transaction price is an indicator of the market value of a development. It is an indicator of market price better than the developers' asking price.

The mean and median of the average unit price in our data set is 12,930 and 11,948 (RMB/m^2) respectively. The maximum unit price is 37,029 (RMB/m^2), which is about 3 fold of the mean, while the minimum unit price is less than 3,000 (RMB/m^2).

Figure 3.4 shows the distribution of this variable.

Figure 3.4

Average transaction unit price of developments



Average flat size (continuous)

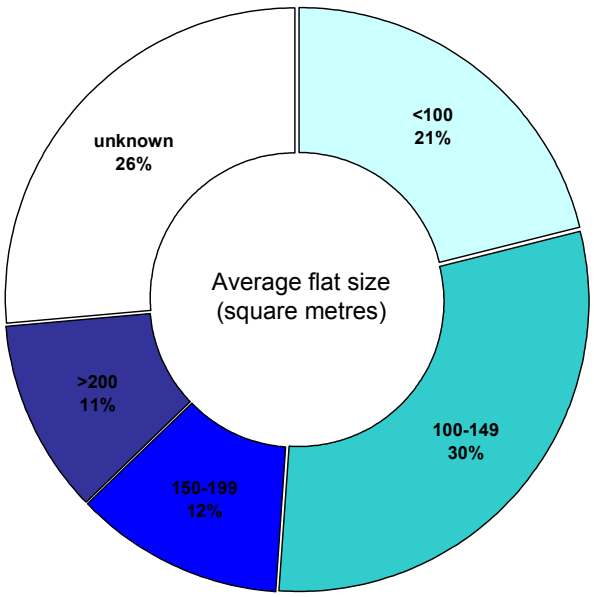
Average size of flats in a development (measured in gross floor area) is given in square metres.

The mean and median sizes of flats of all developments are $146\,m^2$ and $124\,m^2$ respectively. The largest average flat size is over $400\,m^2$. In contrast, the smallest average flat size is only

about 50 m^2. Figure 3.5 shows the distribution of this variable.

Figure 3.5

Average flat size of developments



Chapter 4. Results and Discussion

This chapter will present and discuss the results. Since there are very few samples of villa type development, the variable 'Type' may not be reliable. Hence, we will carry out two separate tests. Test 1 includes all the independent variables,. While in Test 2, the independent variable 'Type' will be excluded.

4.1 Result of Test 1

Test 1 includes all the 4 independent variables. The result of model is shown in table 4.1.

Table 4.1

Results of Test 1

Ordinal Probit Fit for fitting out

Whole Model Test

Model	-LogLikelihood	DF	ChiSquare	Prob>ChiSq
Difference	13.789688	4	27.57938	<.0001
Full	54.422227			
Reduced	68.211915			

RSquare (U)	0.2022
Observations (or Sum Wgts)	99

Parameter Estimates

Term	Estimate	Std Error	ChiSquare	Prob>ChiSq
Intercept[1]	5.78114341	1.677841	11.87	0.0006
ring location	0.5241124	0.2401564	4.76	0.0291
flat type[1-0]	-2.21816522	0.9950078	4.97	0.0258
unit price	0.0002573	0.0000733	12.31	0.0004
average flat size	0.0050383	0.0043489	1.34	0.2467

Independent variable	Expected sign of coefficient	Outcome	Significance level
Ring location	+	+	5%
Type of residential units	-	-	5%
Transaction unit price	+	+	0.5%
Average flat size	-	+	Not significant

There are 99 samples included in the model. The difference between the total number of data set and the sample size for Test 1 is due to some missing data in some variables. In particular, the

variable ‘average transaction unit price’ has many missing information.

From the results, it is found that most (3 out of 4) coefficients of independent variable is consistent with the prediction. They include ring location, type of residential units and unit transaction price. The coefficients for these three variables are all significant at 5% significance level or less. However, the coefficient of the variable ‘average flat size’ is not significant.

The results of the first three independent variables, namely, the ring location, type of residential units and the transacted unit price, are consistent with the expectation.

4.2 Test 2

As there are very few observations for villa type development, the result for the variable ‘type of development’ may not be reliable. We hence perform a second test where only apartment type developments are included. By doing so, we can rule out the

influence of type of flats to the dependent variable. The results are shown in table 4.2.

Table 4.2

Results of Test 2

Ordinal Probit Fit for fitting out

Whole Model Test

Model	-LogLikelihood	DF	ChiSquare	Prob>ChiSq
Difference	13.120460	3	26.24092	<.0001
Full	46.466940			
Reduced	59.587400			

RSquare (U)	0.2202
Observations (or Sum Wgts)	86

Parameter Estimates

Term	Estimate	Std Error	ChiSquare	Prob>ChiSq
Intercept[1]	6.7933859	1.9866622	11.69	0.0006
ring location	0.591733	0.2623912	5.09	0.0241
unit price	0.0002907	0.0000831	12.25	0.0005
average flat size	0.0080072	0.0065615	1.49	0.2223

Independent variable	Expected sign of coefficient	Outcome	Significance level
Ring location	+	+	5%
Transaction unit price	+	+	0.5%
Average flat size	-	+	Not significant

After sorting away the villa type developments, we fit a model focusing on the apartment type developments.

We see from the result that, similar to the previous test, the outcome of the independent variables, namely ring location and

transaction unit price, is consistent with the predicted outcomes derived from the hypotheses. The significance level is consistent with the previous study as well. The result shows that the independent variable ‘ring location’ is significant at a 5% level and that of ‘transaction unit price’ is 0.5%. Their significance levels are acceptable and reliable. We can hence deduce that these two characteristics are of high significance to influence decision of tie-in sales arrangement.

This time the McFadden R-squared value is 0.2202. It is even higher than the previous study. It tells that the independent variables used in Test 2 are of higher relevance with the dependent variable comparing to Test 1.

4.3 Discussion

The two empirical studies, Test 1 and Test 2, have similar results. Hypothesis 1 predicts that there is a positive relation between transaction unit price and the tie-in sales arrangement. While Hypothesis 3 predicts that there is a positive relation between the location ring of development and the tie-in sales arrangement.

The coefficients of the independent variable 'unit price' are positive in both Tests. It indicates that for a development with higher sales unit price, there is a higher chance that the tie-in sales is arranged on that development. It is because for a tied property, the unit price of the entire flat consists of 3 values – some portion of the land, the structure of building, and the fitting out. In contrast, for an untied property, the unit price includes just the former two categories. Thus, it is apparent that tie-in sales arrangement would be more likely found in developments with higher unit price. Hence, Hypothesis 1 is not refuted.

The coefficients of the independent variable 'ring location' are

positive in both Test 1 and Test 2. It indicates that for a development farther away from the city centre, the probability of observing tie-in sale in that development is higher. The result shows that developers tend to provide fitting outs to suburb developments, as people living far away from the city centre are more willing to purchase flats tied with fitting outs.

Land price is a very significant cost factor for any kind of residential buildings to be developed. The general rule is that the nearer a development is to the city centre, the higher its land price would be, and hence making the flat more expensive. Providing the same housing quality, price of flats located near the city centre is higher than those far away from city centre, due to its high land price. Under the same budget level, one can ask for a higher quality flat in suburbs. This is the reason why most people with lower income may prefer flats located in the suburbs. The higher the order of the ring and the farther its location from the city centre, the lower its price would be. Hence, the economies of scale in the mass production of fitting outs would

be treasured more. The Hypothesis is not refuted. This means that the distance to the city centre is a good criterion for separating two groups of consumers with different preferences with regards to tying fitting outs to structure.

Hypothesis 2 predicts that villa type developments has a lower probability of coming with fitting outs. Test 1 shows that the coefficient of this variable is significant at 5% level. The negative sign of the coefficient indicates that developments consisting of villa type buildings will have a lower probability of coming with fitting outs. Hence, Hypothesis 2 is not refuted. As the target group of customers considers uniqueness and taste at a higher priority, the cost saved by economies of scale of mass production of fitting outs is of a little value to them.

Hypothesis 4 predicts that there is a negative relation between the average flat size and the tie-in sales arrangement. The results of Test 1 and Test 2 are consistent. The coefficients in the two tests are not significant. Hence, Hypothesis 4 is refuted. Size of

flat is found not to be a criterion for separating consumers with different preferences for tying fitting out with flat structure.

Chapter 5. Conclusion

This dissertation aims to study factors affecting developers' decision to tie fitting out to structure in a competitive residential real estate market. Literature on tie-in sale has been focusing on theoretical studies of monopoly markets. Most of them were based on many unrealistic assumptions so that verification of their theories was impossible. This dissertation does not make unrealistic assumptions, it relies on empirical findings instead. It is submitted that heterogeneous consumer preference for economies of scale is the primary reason for tie-in sales of fitting out with structure in Beijing's private residential real estate market. It then adopted the probit model to verify 4 proposed objective measures of separating consumers with different preferences. A total of 137 residential developments in Beijing on sale in recent years are investigated.

The four measures are 'ring location', 'type of flats in development', 'transaction unit price' and 'average size of flat of development'. The results show that consumers with different

preferences for tied fitting out could be separated by three measures.

The unit transaction price, the type of flats and the distance from city centre of the development are found to have very significant effect on the probability of the existence of tie-in sales in development. These factors help the developers to separate groups of consumers with heterogeneous preference on cost savings by a mass production of tied fitting out

The result shows that it is more probable to see the tying of fitting out to structure in apartments then in villa type developments. This tying arrangement actually reflects what developments' target group of customers are. Villa type developments are more often targeting at higher income groups, who prefer uniqueness of design to cost saving by mass production.

On the other hand, distance of development from city centre is

also a factor capable of separating different consumer groups. Due to the effect of land price and the level of convenience, developments located near town centre target at the higher income groups rather than low income groups. The empirical study shows that the farther away from city centre a development is located, the higher the probability it comes with fitting out.

Thirdly, unit transaction price is found to have significant effect on the probability of observing tying in a development. This is simply due to the fact that the cost of tied product (fitting out) is included in unit price.

5.1 Limitations of study and areas for improvement

One possible limitation of this study is that characteristics of the developers are not investigated. As mentioned before, 137 data samples are collected. It is found that the private residential real estate market in Beijing is full of competition, as the ratio of developments to developers is approximately one to one. However, it is possible that some of the developers, although labeled with unique names, may come from the same group. The problem is that developers may have their own sales and marketing strategies. Thus, it is believed that if the developers' information can be collected and investigated to a deeper extent, improvements can be achieved. For instance, hypothesis considering the developers' preference may be tested.

The factors proposed may not be the full story. Some other factors may also be relevant. For instance, the location factor may not only be limited to distance from city centre, if there can also be district variance. In addition, the hypothesis about location factor is measured by the distance between the

developments and the city centre, while such factor is quantified as the ring number that a specific development is located. One should be noted that the city planning in Beijing is special. Beijing's centre is the low-rise Forbidden city, while height restrictions are imposed in the surrounding areas. Thus, this city centre area is not suitable for the development of central business district which requires plenty of high rise commercial office buildings for the accumulation of business. Instead, CBD of Beijing is planned in Chaoyang district. The Chaoyang district occupies a large portion of city area around the eastern third ring. The presumption that the CBD should be located around the city centre is not suitable for Beijing.

It is mentioned in the part of hypothesis development that convenience of location may affect the land price. This convenience of location is measured solely by the distance from city centre. The limitation here is that it ignored the effect of CBD to the location's convenience. Thus, it is suggested that the study may be improved if a factor concerning the location of

development around the CBD of Beijing is investigated. For example, a measurement of distance from the centre of CBD or a series of dummy variables representing the location districts may be useful to investigate the effect of CBD towards tying arrangement.

A review of the literature shows that empirical studies on tie-in sales is lacking. Further empirical studies are encouraged to investigate on this important area.

Bibliography

Adams, William J. and Yellen, Janet L. Commodity Bundling and the burden of monopoly. *The Quarterly Journal of Economics* 90 (3) (1976): 475-498

Aldrich, J. H. *Linear probability, Logit, and models*. Beverly Hills: Sage Publication, 1984.

Amemiya, T. Qualitative response models: A survey. *Journal of Economic Literature* 19 (4) (1981): 1483-1536.

Barzel, Yoram. Competitive typing arrangements: the case of medical insurance. *Economic Inquiry* 19 (1981): 598-612

Beijing Municipal Bureau of Statistics. *Beijing Statistical Yearbook 2007*. Beijing: China Statistical Publishing House, 2007

Blair, Roger D. and Kaserman, David L. Vertical integration, tying and antitrust policy. *The American Economic Review* 68(3) (1978): 397-402.

Bowman, Ward S. Tying arrangements and the leverage problem. *The Yale Law Journal* 67(1) (1957): 19-36

Burstein, M. L. A theory of full-line forcing. Northwestern *University Law Review* 55 (1960b): 62-95

Burstein, M. L. The economies of tie-in sales. *The Review of Economics and Statistics* 42 (1) (1960a): 68-73

Carbojo, Jose, de Meza, David and Seidmann, Daniel J. A strategic motivation for commodity bundling. *The Journal of Industrial Economics* 38 (3) (1990): 283-298

Carlos, D. *Multinomial Probit*. New York: Academic Press, 1979.

Carlton, Dennis W. and Waldman, Michael. The strategic use of tying to preserve and create market power in evolving industries. *The RAND Journal of Economics* 33 (2) (2002): 194-220

Chen, Yongmin. Equilibrium product bundling. *The Journal of Business* 70 (1) (1997): 85-103.

Choi, Jay P. and Stefanadis, Christodoulos. Tying, investment, and the dynamic leverage theory. *RAND Journal of Economics* 32 (1) (2001): 52-71

Cramer, J. S. *Logit Models from Economics and Other Fields*.

Cambridge: Cambridge University Press, 2003.

Craswell, Richard. Tying requirements in competitive markets: the consumer protection issues. *Boston University Law Review* 62 (3) (1982): 661-700.

Evan, David S. and Salinger, M. Why do firms bundle and tie? Evidence from competitive markets and implications for tying law. *Yale Journal on Regulation* 22 (2005): 37-89

Ferguson, James M. Tying arrangements and reciprocity: an economic analysis. *Law and Contemporary Problems* 30 (3) (1965): 552-580.

Fox, J. *Applied Regression Analysis, Linear Models, and Related Methods*. Thousand Oaks, Calif: Sage Publication, 1997.

Guiltinan, Joseph P. The price bundling of services: a normative framework. *Journal of Marketing* 51 (1987): 74-85.

Haas Wilson, Deborah. Tying requirements in markets with many sellers: the contact lens industry. *The Review of Economics and Statistics* 69 (1) (1987): 170-175.

Hosmer, D. W. and Stanley Lemeshow. *Applied Logistic Regression*. New York: John Wiley & Sons, 1989.

Hunt, Shelby D. and Nevin, John R. Tying agreements in franchising. *Journal of Marketing* 39 (1975): 20-26.

Inaba, Frederick S. Franchising: Monopoly by contract. *Southern Economic Journal* 47 (1) (1980): 65-72.

Kaplow, Louis. Extension of monopoly power through leverage. *Columbia Law Review* 85 (3) (1985): 515-556.

Klein, Benjamin and Saft, Lester F. The law and economics of franchise tying contracts. *Journal of Law and Economics* 28 (2) (1985): 345-361.

Long, J. S. *Regression Models for Categorical Limited Dependent Variables*. Thousand Oasks: Sage Publication, 1997.

Markovits, Richard S. Tie-ins, reciprocity, and the leverage theory. *The Yale Law Journal* 76 (7) (1967): 1397-1472.

Mathewson, Frank and Winter, Ralph. Tying as a response to demand uncertainty. *The RAND Journal of Economics* 28 (3) (1997): 566-583.

Matutes, Carmen and Regibeau, Pierre. Compatibility and bundling of complementary goods in duopoly. *The Journal*

of Industrial Economics 40 (1) (1992): 37-54.

McAfree, R. P., McMillan, John. and Whinston, Michael D. Multiproduct monopoly, commodity bundling, and correlation of values. *The Quarterly Journal of Economics* 104 (2) (1989): 371-383.

Nagle, Thomas. Economic foundations for pricing. *Journal of Business* 57 (1) (1984): S3-S26.

Palfrey, Thomas R. Bundling decisions by a multiproduct monopolist with incomplete information. *Econometrica* 51 (2) (1983): 463-483.

Posner, Richard A. The Chicago school of antitrust analysis. *University of Pennsylvania Law Review* 127 (4) (1979): 925-948.

Schmalensee, Richard. Commodity bundling by single product monopolies. *Journal of Law & Economics* 25 (1) (1982): 67-71.

Schmalensee, Richard. Gaussian demand and commodity bundling. *Journal of Business* 57 (1) (1984): S211-S230.

Slade, Margaret E. The leverage theory of tying revisited:

Evidence from newspaper advertising. *Southern Economic Journal* 65 (2) (1998): 204-222.

Stigler, George J. United States v. Loew's Inc.: A note on block booking. *The Supreme Court Review 1963* (1963): 152-157.

Stremersch, Stefan. And Tellis, Gerald J. Strategic bundling of products and prices: a new synthesis for marketing. *Journal of Marketing* 66 (2002): 55-72.

Telser, L. G. A theory of monopoly of complementary goods. *Journal of Business* 52 (2) (1979): 211-230.

U.S. Department of Justice, Vertical Restraints Guidelines, *antitrust and trade regulation report*, Washington: Bureau of National Affairs, 1985

Whinston, Michael D. Tying, foreclosure, and exclusion. *The American Economic Review* 80 (4) (1990): 837-859.

Wollenberg, Keith K. An economic analysis of tie-in sales: re-examining the leverage theory. *Stanford Law Review* 39 (3) (1987): 737-760.

Yamey, Basil. Monopolistic price discrimination and economic

welfare. *Journal of Law & Economics* 17 (2) (1974): 377-380.

Appendix

Table of data collection – Beijing residential development

	市	地區	項目	環綫		物業類型		層數		容積率	均價	批准總面積	可售面積	成交統計						裝修		開發商
											($RMB/m2)			均價	套數	總面積	平均面積	開售日	入伙日		精裝=1	
2007上市一覽																						
1	北京	朝陽	和喬麗致	3-4	3	公寓	0	16	16	4	24,000							Jan-07		精裝	1	北京奧德房地产开发有限公司
2	北京	朝陽	世界城	2-3	2	公寓	0	31	31	5.5	32,000	98,189		27,315	28	10,184	364	Feb-07	Jun-09	精裝	1	北京京汇房地产开发有限公司
3	北京	朝陽	國貿 DNA	3-4	3	公寓	0	6	6		16,154							Feb-07	Sep-07	精裝	1	北京福至创展
4	北京	東城	雅安國際商務公寓	2 內	1	公寓	0	19	19	4.02	15,000	74,156		15,083	140	20,734	148	Dec-05	Mar-06	精裝	1	北京城市开发集团新永安房地产开发公司
5	北京	東城	瑞士公寓	2-3	2	公寓	0	14	16	4	33,000	21,428		26,598	146	14,255	98	May-07	Apr-08	精裝	1	北京安泰置业房地产开发有限公司
6	北京	朝陽	北京財富中心	2-3	2	公寓	0	60	60	7	40,000	132,413		36,453	112	32,603	291	Jun-02	Apr-05	精裝	1	北京香江兴利房地产开发有限公司
7	北京	東城	禾風尚品	2 內	1	公寓	0	12	12	0.07	22,000							Sep-07	Nov-08	精裝	1	北京亿洋星城房地产开发有限公司

8	北京	朝陽	世華國際中心	2-3	2	公寓	0			5.7		84,139						Oct-07	Dec-07	精裝	1	北京城建投资发展股份有限公司
9	北京	朝陽	鉑宮國際中心二期	2-3	2	公寓	0	6	18	2.48								Sep-03	Oct-05	精裝	1	北京京隆房地产开发公司
10	北京	朝陽	禧福滙國際社區	3-4	3	高尚住宅	0	20	20	2.5	14,000							Oct-07	Aug-09	精裝	1	北京首驰昱达房地产开发有限公司
11	北京	朝陽	華業玫瑰郡	4-5	4	普通住宅	0	11	14	2.78	19,000	44,891						Aug-07	Dec-08	精裝	1	华业地产
12	北京	朝陽	優唐 UTOWN	2-3	2	公寓	0	24	25	5.5		30,185							Dec-07	精裝	1	北京兆泰房地产开发有限责任公司
13	北京	東城	金成國際中心二期	2 內	1	公寓	0	25	25	5.69	24,000							Oct-07	Mar-08	精裝	1	北京三峡大厦房地产有限公司
14	北京	朝陽	青年滙 1-1,1-2,1-3 号	4-5	4	普通住宅	0	13	16	2.96	11,500	86,813		9,795	739	66,600	90	Jun-04	Mar-06	毛坯	0	新松房地产开发有限公司
15	北京	朝陽	潤楓水尚 2-4 号	4-5	4	公寓	0	9	15	2.21	18,000	252,668	11,751	12,778	1,330	145,996	110	Jun-06	Dec-07	精裝	1	北京润丰房地产开发有限公司
16	北京	朝陽	天鵝灣三期 11,12,31-34 号	4-5	4	公寓	0	15	25	2.77	18,000	239,887	74,634	13,195	1,455	183,481	126	Nov-05	May-07	精裝	1	北京博成房地产有限公司
17	北京	朝陽	新華聯麗景珊瑚灣 2-3,5-7 号	4-5	4	普通住宅	0	16	20	2.6	16,500	76,018		14,452	208	28,341	136	Feb-07	May-08	精裝	1	北京新华联伟业房地产有限公司
18	北京	朝陽	泛海國際	4-5	4	公寓	0	18	18	2.3	25,800	284,121		17,553	1,335	279,314	209	Jul-06	Mar-08	精裝	1	北京泛海信华置业有限公司
19	北京	朝陽	柏林愛樂三期 12 号，四期	5 外	5	普通住宅	0	7	21	2.21	10,000	240,394	251,278	8,288	1,885	164,456	87	Sep-07	Jun-08	毛坯	0	北京市城乡房屋建设开发公司
20	北京	朝陽	東恒時代家園二期 AB 組	4-5	4	普通住宅	0	21	21	2.9	18,000	45,237		14,986	237	25,132	106	Sep-07	Jul-08	精裝	1	北京方恒房地产开发有限公司

21	北京	朝陽	北京奥林匹克花園三,四期	5 外	5	普通住宅	0	7	9	0.84	14,000	86,811		11,018	227	31,532	139	Sep-07	2009 年	精装	1	北京奥林匹克置业投资有限公司
22	北京	朝陽	合生橄欖季四期 1 号	4-5	4	普通住宅，公寓	0	17	22	2.93	16,600	132,192	191,202	9,760	953	122,239	128	Nov-05	Dec-07	精装	1	北京合生愉景房地产开发有限公司
23	北京	朝陽	蘋果派 A 區 4,6 号	5 外	5	普通住宅	0	10	12	1.85	8,200	153,567	2,651	7,023	1,835	150,295	82	Mar-06	Jan-07	毛坯	0	北京营基房地产开发有限公司
24	北京	朝陽	樂成公館二期 1,3 号	3-4	3	公寓	0			2.96	24,000	94,837	33,617	16,922	302	54,561	181	Oct-04	May-06	精装	1	北京达义北方置业有限公司
25	北京	朝陽	珠江帝景 D 區	3-4	3	普通住宅，公寓	0	14	16	2.89	21,000	136,526		17,752	562	67,473	120	Sep-05	Dec-05	精装	1	北京合生北方房地产开发有限公司
26	北京	朝陽	北京新天地三期 18,19,20,23,24 号,四期	5 外	5	普通住宅	0	11	28	3.11	10,400	306,461	3,085	7,364	3,284	291,518	89	Aug-06	Dec-07	毛坯	0	北京硕和房地产开发有限公司
27	北京	朝陽	金隅鳳麟洲	4-5	4	普通住宅，别墅	1	4	10	2.18	18,000	52,138		16,238	356	33,816	95	Apr-07	Oct-08	毛坯	0	北京金隅嘉業房地產開發有限公司
28	北京	朝陽	上東上層二期	5 外	5	公寓	0	6	12	2.07	9,270	40,172		8,470	490	40,172	82	Jul-06	Aug-07	毛坯	0	北京富利房地产开发有限责任公司
29	北京	朝陽	A-Z TOWN	4-5	4	公寓	0	14	20	2.8	18,500	246,183	9,378	10,134	1,392	167,421	120	Dec-05	Jan-07	精装	1	北京首创新资置业有限公司
30	北京	朝陽	東岸 2-4 号	4-5	4	普通住宅	0	18	21	2.62	13,500	81,084		9,406	655	77,548	118	Oct-04	Jul-06	毛坯	0	北京住总房地产开发有限责任公司
31	北京	朝陽	萬科金陽國際公寓	4-5	4	公寓	0	3	19	1.38	18,500							Jun-07	Oct-08	精装	1	北京市朝阳万科房地产开发有限公司
32	北京	朝陽	華紡易城	4-5	4	普通住宅	0	12	18	2.46	13,500	111,459		12,840	216	23,156	107	Jul-04	Jun-05	毛坯	0	华纺房地产开发公司北京分公司
33	北京	朝陽	華業玫瑰東方商務公寓	3-4	3	公寓	0	11	18	2.78	16,000	78,262		12,815	7	1,386	198	Aug-05	Jan-07	精装	1	北京高盛华房地产开发

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34	北京	朝陽	萬象新天三期天際萬象高爾夫花園	5 外	5	普通住宅, 别墅, 公寓	1	6	18	1.4	9,500	62,253		7,206	347	57,386	165	Dec-03	Dec-05	精裝	1	北京天鸿房地产开发有限责任公司
35	北京	朝陽	北京星河灣	4-5	4	公寓	0	8	16	3	34,000	195,313		28,353	56	18,403	329	Jul-05	May-06	精裝	1	宏宇集团
36	北京	朝陽	萬象新天三期天際萬象高爾夫花園 201,206 号	5 外	5	公寓	0	6	19	1.4	9,800	8,932		9,554	54	8,236	153	Sep-07	Sep-08	精裝	1	北京天鸿房地产开发有限责任公司
37	北京	朝陽	置地公館	3-4	3	公寓	0	7	9	2.7	32,000							Sep-07	Jul-07	毛坯	0	华润置地（北京）股份有限公司
38	北京	朝陽	遠洋一方	5 外	5	普通住宅	0			1.58	11,000	40,975		10,822	15	1,238	83	Sep-07	2008 年	毛坯	0	北京中联置地房地产开发有限公司
39	北京	朝陽	東區國際二期行政公館	3-4	3	公寓	0	26	32	3.6	15,000	181,213		5,784	57	9,727	171	Mar-03	May-05	精裝	1	北京三能达置业有限公司
40	北京	朝陽	海華堂	4-5	4	公寓	0	33	33	2.8	8,000	29,018		8,244	309	28,887	93	Sep-06	Jun-08	毛坯	0	北京方晟房地产开发有限责任公司
41	北京	朝陽	商富中心 (金海國際四期)	4-5	4	商住樓	0	23	23	4.5	12,600	88,831	222,494					Jan-07	Dec-07	毛坯	0	北京源海房地产开发有限公司
42	北京	朝陽	合生國際花園 16-18 号, 中央樓王區	2-3	2	高尚住宅	0	18	24	3.4	24,000	182,247	18,024	14,534	1,317	153,152	116	May-06	Aug-07	精裝	1	北京合生绿洲房地产开发有限公司
43	北京	朝陽	沿海賽洛城五期	4-5	4	普通住宅	0	8	14		14,500	198,045	10,899	11,077	1,834	151,046	82	Jan-07				北京高盛房地产开发有限公司
44	北京	朝陽	蘋果社區	3-4	3	公寓	0			4.37	14,000	127,091	6,404	13,938	740	61,309	83	Apr-04	Aug-05	精裝	1	今典集团
45	北京	朝陽	美景東方	3-4	3	公寓	0	12	14	2.99	13,000	79,072	83,321	9,186	498	58,877	118	Aug-04	Dec-05	毛坯	0	北京达义兴业房地产开发有限公司
46	北京	朝陽	金泰先鋒 1,2,7-11 号	4-5	4	普通住宅	0	9	18	2.2	13,500	37,326		9,426	404	37,058	92	May-07	Oct-08	毛坯	0	北京金泰恒业有限责任

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47	北京	朝陽	CBD 傳奇	3-4	3	普通住宅	0	19	21	2.75	12,000	62,480		10,616	748	55,973	75	Dec-05	Apr-07	毛坯	0	北京中力房地产开发有限公司
48	北京	朝陽	金都杭城二期	4-5	4	公寓	0	17	20	2.86	14,000	76,069		12,523	612	61,051	100	Sep-05	Dec-06	毛坯	0	北京浙金都房地产开发有限公司
49	北京	朝陽	山水文園四期	3-4	3	普通住宅, 别墅	1	18	18	1.64	26,000	47,402		14,811	25	9,472	379	Sep-07	Aug-08	精裝	1	北京力维斯凯亚房地产开发有限公司
50	北京	朝陽	PEKINGHOUSE 首府公寓	3-4	3	別墅, 公寓	1	4	9	0.8-1.3	30,000	129,417	82,074	20,478	107	46,558	435	Jun-05	Jul-07	毛坯	0	北京柏宏房地产开发有限公司
51	北京	朝陽	世紀東方城四期	4-5	4	普通住宅	0	14	21	2.08	14,000	483,759		8,229	229	31,179	136	Jun-03	Jun-04	毛坯	0	华瀚投资集团有限公司
52	北京	朝陽	國奧村一,二期	4-5	4	公寓	0	6	9	1.5	22,000	141,080		19,639	666	133,638	201	Jan-07	Jun-09	精裝	1	国奥投资发展有限公司
53	北京	昌平	新龍城六期 2,3,5,6,8,17,23 号, 七期 26-29,31 号	5 外	5	普通住宅	0	8	15	2.46	12,000	331,042	91,085	7,580	3,324	312,061	94	Sep-07	Oct-07	毛坯	0	北京新龙房地产开发有限公司
54	北京	朝陽	公園 2008 (北苑家園一區) 102,103,109,113 号	5 外	5	普通住宅	0	14	25	2	15,800	65,392		12,447	277	29,890	108	Mar-06	Dec-06	毛坯	0	北京城建兴华房地产有限公司
55	北京	朝陽	世貿奧臨花園 4-6 号	5 外	5	普通住宅	0	15	26	2.28	20,000	201,044	208,353	18,453	656	130,074	198	Oct-05	Dec-06	精裝	1	北京世茂投资发展有限公司
56	北京	朝陽	風格派 (歐陸經典三期)	4-5	4	公寓	0	11	19	3.5	15,000	24,796		13,452	325	16,820	52	Jan-07	May-08	精裝	1	北京太合龙脉房地产开发有限责任公司
57	北京	朝陽	康斯丹郡二期桂冠名園	4-5	4	公寓	0	9	9	2.2	16,000							Jul-03	Dec-04	精裝	1	北京和祥恒房地产开发有限公司
58	北京	昌平	北京北 9,11 号	5 外	5	普通住宅	0	17	20	2.42	8,000	128,597		6,619	1,536	128,597	84	Jul-06	Dec-07	毛坯	0	北京新天麓房地产开发有限公司
59	北京	朝陽	保利金泉廣場 4,10 号	4-5	4	普通住宅	0	30	30	3.5	12,000	389,997	67,035	9,346	1,561	181,348	116	Jun-06	Dec-07	毛坯	0	北京政泉置业有限公司

60	北京	朝陽	上元君庭 C2,C3 号	5 外	5	别墅，公寓	1	32	32	3.18	14,800	35,334		14,404	148	21,169	143	Mar-05	Dec-06	毛坯	0	凯德置地
61	北京	昌平	頂秀清溪	5 外	5	普通住宅，花園洋房	1	5	15	1.8	9,500	83,388		8,053	610	82,752	136	Oct-05	Mar-07	毛坯	0	北京泰福恒投资发展有限公司
62	北京	昌平	矩陣三期 16 号	5 外	5	公寓	0	10	10	1.58	9,000	46,849	2,281	6,748	553	44,455	80	Apr-06	Dec-07	毛坯	0	北京腾昌兴房地产开发有限公司
63	北京	昌平	園墅二期 46,47,48,14,18,19 号	5 外	5	别墅	1	2	4	0.86	10,300	73,006	4,466	9,178	182	48,063	264	Aug-07	Oct-08	毛坯	0	北京澳柯玛中嘉房地产开发有限公司
64	北京	朝陽	亞運新新家園三期 7,10 号,四期	4-5	4	别墅，公寓	1			0.6	26,000	171,587		11,948	2	512	256	Nov-01	Dec-02	毛坯	0	北京万通先锋置业股份有限公司
65	北京	昌平	龍華苑三期 9 号	5 外	5	普通住宅	0			1.71	8,120	6,438		8,402	26	2,113	81	Mar-04	Jul-05	初裝修	0	北京三江鸿泰房地产开发有限公司
66	北京	朝陽	聞濤苑六期	4-5	4	普通住宅	0	6	24	2	13,600	171,183		6,495	25	2,849	114	Mar-03	Jul-04	毛坯	0	北京旭日房地产开发有限责任公司
67	北京	朝陽	旭輝奧都 1,4,10 号	5 外	5	公寓	0	10	27	4	8,700	198,449						Jun-07	Mar-09	毛坯	0	旭辉集团旗下北京永旭置业有限公司
68	北京	朝陽	北緯 40 度	5 外	5	普通住宅，花園洋房	1	4	29	2.5	12,000	189,685		12,024	888	101,520	114	Sep-07	May-09	毛坯	0	北京新天朝来房地产开发有限公司
69	北京	朝陽	美倫堡	4-5	4	公寓	0	9	15	2.5	17,000	25,734						Jul-07	Sep-08	精裝	1	北京和达创建置业有限公司
70	北京	朝陽	健翔國際公寓	3-4	3	公寓	0	13	13	3.27	17,000							Aug-07	Jan-08	精裝	1	北京诚信兴业房地产有限公司
71	北京	朝陽	榮尊堡國際俱樂部公寓	4-5	4	公寓	0	23	24	4.6	26,500	167,888	99,085	14,516	653	109,206	167	Sep-07	Mar-08	精裝	1	北京新荣房地产开发有

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72	北京	朝陽	媒體村公寓	5 外	5	公寓	0	11	32	4		220,253		10,672	10	1,018	102	Sep-07	Dec-08	精装修,毛坯		北京北辰实业股份有限公司
73	北京	昌平	北京太陽城三期 8,17 号	5 外	5	公寓	0	6	6	1	7,800	103,326	71,538	6,470	674	83,789	124	Sep-07	Apr-08	精装	1	北京太阳城房地产开发公司
74	北京	朝陽	奧東 18 南區	3-4	3	公寓	0	15	23	3.96	20,000							Oct-07	Jun-08	精装	1	北京瑞丰恒泰房地产开发有限公司
75	北京	朝陽	大湖公館	5 外	5	公寓	0	22	23	3.2	20,000	52,962		19,821	66	4,786	73	Sep-07	2008 年	精装	1	万达集团
76	北京	朝陽	七星摩根廣場	4-5	4	公寓	0	19	19	7	36,000							Sep-07	May-08	毛坯	0	北京盘古氏投资有限公司
77	北京	朝陽	保利香檳花園	4-5	4	普通住宅	0	18	18	2.5	17,000							Sep-07	Jan-09	毛坯	0	保利地产
78	北京	朝陽	華發頤園三期	5 外	5	普通住宅，公寓	0	11	19	2.45	13,000							Jul-06	May-07	精装	1	北京九郡房地产开发有限公司
79	北京	海淀	永泰園 13 号	5 外	5	普通住宅，公寓	0	16	16	4.1	7,300	115,117		2,956	13	1,906	147	Jun-01	Mar-03	精装	1	北京市泰华房地产开发集团有限公司
80	北京	海淀	輝煌國際廣場	5 外	5	公寓	0			3.5	18,000	153,448	77,681					Apr-06	Oct-07	精装	1	北京辉煌世纪房地产开发有限公司
81	北京	海淀	THE HOUSE 國際花園	5 外	5	普通住宅，花園洋房	1	6	6	1.59	19,800	19,291		14,945	41	9,534	233	Jan-07	Jun-08	精装	1	北京鼎嘉恒房地产开发有限公司
82	北京	海淀	萊鎮香格里二期 11,12,17 号	5 外	5	普通住宅	0	9	15	2.37	10,000	61,112		8,091	710	60,043	85	Jul-05	Oct-06	毛坯	0	北京海欣方舟房地产开发有限公司
83	北京	海淀	褐石二期 8,18,21 号	4-5	4	普通住宅	0	5	5	1.2	19,000	139,686	72,835	12,273	595	127,443	214	Apr-05	Oct-06	毛坯	0	北京泰跃房地产开发有限责任公司
84	北京	海淀	富力桃園	5 外	5	普通住宅	0	11	11	2.25	13,000	151,454		9,571	1,237	120,202	97	Nov-06	Nov-07	精装	1	北京鸿高置业发展有限

			A1-A12,A15-A20 号																		公司
85	北京	海淀	上第 MOMA 四期 7-9,11 号	5 外	5	普通住宅	0			2.2	15,500	118,713	7,159	12,634	704	104,614	149	Dec-05	Oct-07	精装	1	北京当代房地产开发有限责任公司
86	北京	海淀	觀林園北區 2-4 号	5 外	5	普通住宅	0	6	9	1.4	11,000	27,069		8,768	250	27,069	108	Apr-07	Jun-08	毛坯	0	首开·天鸿
87	北京	海淀	波爾多情懷	5 外	5	普通住宅	0	6	6	1.38	13,000	66,686		10,328	602	57,360	95	Sep-07	Oct-08	毛坯	0	北京宝晟住房股份有限公司
88	北京	昌平	香江別墅二期	5 外	5	別墅	1			0.3		35,572		9,128	28	11,998	429	May-05	Mar-06	毛坯	0	香江国际发展有限公司
89	北京	朝陽	ULO PARK 悠樂滙 B 區 C 座	4-5	4	公寓	0	28	28	4.59	13,000	117,672						Nov-06	Oct-08	精装	1	北京圣鹏房地产开发有限公司
90	北京	朝陽	季景沁園二期 2 号	4-5	4	普通住宅	0	22	28	3.35	15,000	144,954	216,354	9,159	855	117,074	137	Jul-04	Sep-07	精装	1	北京京励房地产开发有限公司
91	北京	朝陽	望京國際商業中心朝庭公寓 3 号	4-5	4	公寓	0	27	27	4.17	14,000							Apr-06	Oct-07	廚衛裝	0	北京正鹏房地产开发有限公司
92	北京	朝陽	嘉美風尚中心二期	4-5	4	公寓	0	19	27	3.98	13,500	147,825		8,228	83	13,906	168	Sep-05	Oct-06	毛坯	0	北京金冠达房地产开发有限公司
93	北京	朝陽	融科橄欖城	4-5	4	普通住宅	0	18	28	2.7	16,800	178,433	75	10,200	1,237	168,091	136	Sep-05	Dec-06	毛坯	0	北京融科智地房地产有限公司
94	北京	朝陽	元大都	4-5	4	公寓	0	15	15		21,000	23,144		17,533	261	16,816	64			精装	1	北京隆华广厦房地产开发有限公司
95	北京	朝陽	首開知語城	4-5	4	普通住宅	0	10	22	2.01	13,000	63,727		9,845	527	57,310	109	Oct-06	Jun-08	毛坯	0	北京首都开发控股(集团)有限公司
96	北京	朝陽	華彩國際公寓	4-5	4	公寓	0	18	21	3.39	15,800	37,976		13,865	338	36,904	109	Jul-07	Oct-08	精装	1	北京华瀛置业房地产开发有限公司
97	北京	朝陽	華源冠軍城二期 2 号	4-5	4	公寓	0			3	16,000	32,055		14,087	73	11,549	158	Aug-05	Aug-06	精装	1	中国华源集团
98	北京	朝陽	中廣宜景灣 D,E,F 座	4-5	4	公寓	0	13	26	4.7	13,500	84,236		13,038	264	25,145	95	Aug-07	Oct-08	毛坯	0	北京天正中广置业有限

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99	北京	朝陽	北京香頌二期	4-5	4	公寓，花園洋房	1	8	18	1.6	20,000	175,727		10,882	445	62,877	141	Sep-07	Aug-09	毛坯	0	北京世安住房股份有限公司
100	北京	朝陽	方恒國際中心	4-5	4	公寓	0	28	28	4.75		67,057						Oct-07		精裝	1	北京方恒房地产开发有限公司
101	北京	朝陽	大西洋新城(富臨中心)六期	4-5	4	普通住宅	0	27	27	2	12,000	70,018	1,531	9,955	313	43,526	139	Nov-07	Jul-08	精裝	1	北京西华房地产开发有限公司
102	北京	朝陽	寶星國際三期	4-5	4	普通住宅	0	15	22	3	15,000	78,826		8,743	45	7,152	159	Jan-05	Sep-06	毛坯	0	北京宝星置业有限公司
103	北京	朝陽	國風北京	4-5	4	普通住宅	0	13	14	2.3	16,000	208,609		10,084	270	36,099	134	Jun-05	May-06	毛坯	0	北京首都开发控股(集团)有限公司
104	北京	朝陽	泰華濱河苑 A 座 1 号	4-5	4	普通住宅	0	27	27	3.68	11,300	92,549		8,604	408	43,823	107	Nov-04	May-05	精裝	1	北京市泰华房地产开发集团有限公司
105	北京	朝陽	麗都東鎮 BOSSA NOVA 3 号	4-5	4	公寓	0	9	9	1.6	12,950	32,843		11,387	197	27,783	141	Oct-07	Jun-08	毛坯	0	北京晨谷苑房地产开发有限公司
106	北京	朝陽	上東三角洲(將府家園)二期	4-5	4	普通住宅	0	19	19	2.94	9,000	515,293		5,720	29	4,385	151	Jul-04	Dec-04	精裝	1	北京将台房地产开发有限公司
107	北京	朝陽	銀河灣	4-5	4	公寓	0	5	20	2.7								Oct-07	Oct-08	精裝	1	北京世纪鸿房地产开发有限责任公司
108	北京	朝陽	US 聯邦公寓	3-4	3	公寓	0	31	31	6.3	26,000	60,377	33,059	21,464	135	26,519	196	Feb-07	Mar-08	精裝	1	北京昊岳房地产开发有限公司
109	北京	朝陽	和平里 DE 小鎮二期和平大道 5 号	2-3	2	普通住宅	0	22	22	3	24,000	165,168	6,887	13,751	812	94,305	116	May-06	Oct-07	毛坯	0	首创置业
110	北京	朝陽	波菲特行政公寓	3-4	3	公寓	0	13	13	2.74	26,000	27,403						Apr-07	May-08	精裝	1	北京市永顺房地产开发有限公司
111	北京	朝陽	梵谷水郡三期	4-5	4	普通住宅	0			2.6	12,000	104,939	33,960	8,975	815	70,979	87	Jul-04	Oct-05	毛坯	0	北京电子城有限责任公

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112	北京	朝陽	燕莎 CLASS	2-3	2	公寓	0	7	7	2.2	25,000							Sep-07	Jun-08	精裝	1	北京泰和基业房地产开发有限责任公司
113	北京	朝陽	遠洋公館	3-4	3	公寓	0											Nov-07		精裝	1	北京林达华夏房地产开发有限公司
114	北京	朝陽	北京公館	2-3	2	公寓	0	25	25	6.4										精裝	1	北京市首旅华远房地产开发有限公司
115	北京	朝陽	置地公寓(鳳凰城三期)	3-4	3	公寓	0	8	30	2.7	25,000	67,021		18,382	138	23,364	169	Mar-06	Dec-06	精裝	1	华润置地(北京)股份有限公司
116	北京	朝陽	中海城四期	3-4	3	普通住宅	0	11	18	1.95	9,500	4,032		9,141	4	883	221	Aug-05	May-07	毛坯	0	中海地产北京公司
117	北京	宣武	茗築	2-3	2	普通住宅	0	27	27	4.7								Jan-07	Jun-08	毛坯	0	北京大厚房地产开发有限公司
118	北京	宣武	信和嘉園三期 A 區	2-3	2	普通住宅	0	19	20	3.1	15,600	28,835		12,496	242	23,405	97	Jan-05	Jun-06	毛坯	0	北京中物信和房地产开发有限公司
119	北京	宣武	源中心	2 內	1	公寓	0	16	16		14,500	45,572		14,354	74	6,366	86	Aug-07	Aug-08	毛坯	0	北京宸京房地产开发有限公司
120	北京	宣武	錦上國際公寓	2 內	1	公寓	0			4.5	19,000							Sep-07	Aug-08	精裝	1	北京市天工房地产开发有限公司
121	北京	宣武	麗水蓮花東區	2-3	2	普通住宅	0			3.5	15,500	59,687	2,716	10,599	599	53,445	89	Jun-06	Jun-07	毛坯	0	北京市天叶房地产开发公司
122	北京	崇文	華龍美晟	2-3	2	普通住宅	0	12	12	3.32										毛坯	0	华龙置业房地产开发有限公司
123	北京	東城	府上嘉園	2-3	2	普通住宅	0	5	11	3.5								Sep-07	May-08	毛坯	0	北京安瑞房地产开发有限公司
124	北京	崇文	北京上舍 1-4 号	2 內	1	公寓, 別	1	4	15	3.56	14,000	41,177		12,949	396	34,592	87	Feb-07	Jul-08	毛坯	0	联立房地产开发有限公

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125	北京	崇文	天嬌園二期 2,3 号	2 內	1	普通住宅	0	11	11	2.83	14,000	39,134		10,767	300	31,170	104	Oct-06	May-08	毛坯	0	北京天华津政房地产开发有限公司
126	北京	崇文	新怡家園西區 8 号	2 內	1	普通住宅	0	10	15	4.23	23,000	106,403	13,121	15,788	638	78,776	123	Mar-05	Jan-06	毛坯	0	北京崇文·新世界房地产发展有限公司
127	北京	崇文	冠城名敦道	2-3	2	公寓	0	12	27	4.7	17,000	12,485		18,146	13	2,509	193	Oct-07	Jun-09	毛坯	0	北京鑫阳房地产
128	北京	崇文	國瑞城公寓	2 內	1	普通住宅，公寓	0			2.7	28,000	743,916		14,815	24	5,691	237	2007 年		毛坯	0	北京国瑞兴业地产有限公司
129	北京	宣武	一瓶三期 8-10 号	2 內	1	普通住宅	0	11	13	2.69	20,000	38,542		18,280	39	10,840	278	Nov-04	Apr-06	毛坯	0	壹瓶房地产开发(北京)有限公司
130	北京	宣武	朱雀門四期	2 內	1	公寓	0	5	8	1.95	18,000	23,112	2,972	12,383	40	5,573	139	Dec-04	May-06	精裝	1	北京中集宏达房地产公司
131	北京	宣武	貴仁居二期	2-3	2	普通住宅	0	19	19	5.46	8,200							Jun-05	Sep-06	毛坯	0	北京房开置业股份有限公司
132	北京	西城	西城晶華 2,5-8 号	2 內	1	普通住宅	0	5	11	2.96	22,000	124,557	9,115	22,729	774	96,452	125	Jul-06	Jun-08	精裝	1	新加坡国浩房地产集团
133	北京	西城	玉廊東園 A-E 座	2 內	1	普通住宅	0				13,500	50,567		13,023	238	38,524	162	Mar-07		毛坯	0	北京国兴建业房地产开发有限公司
134	北京	西城	天安國滙	2 內	1	公寓	0	21	21	6.29	36,800	47,989		37,029	5	854	171	Apr-07	Mar-08	精裝	1	北京天安天地房地产开发有限公司
135	北京	西城	京橋國際公館	2-3	2	公寓	0	19	19	3.07	27,000	96,888		23,514	14	1,723	123	May-07	Aug-07	精裝	1	北京中民信房地产开发有限公司
136	北京	西城	君濠酒店式公寓	2-3	2	公寓	0	13	13	3	21,000							Sep-07	Nov-07	精裝	1	北京颐西房地产开发有限公司
137	北京	西城	CPARK	2 內	1	公寓	0	10	17	3.76	26,000	112,765						Sep-07	Dec-08	全裝	1	北京天太金海置业有限公司

Remarks

1. All money values are measured in RMB
2. All areas are measured in square metres
3. Last update: 30 Sept, 2007

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